

Make Your Diagnosis

Misdirection of an indwelling urethral catheter in the ureter



1. Patient presentation

This 81-year-old gentleman is a patient of dementia. He had been bed-ridden for 6 years with a long-term urethral catheterization for the outflow obstruction from a hypertrophic prostate. The urethral catheter was changed and replaced with a new Foley catheter by a home care nurse. The next day, he was brought to our emergency department because of fever. Different smell of his urine was the only change observed by his carer.

On arrival, his Glasgow coma scale was E4M4V1. Other vital signs were a respiration of 20 breaths/min, a pulse of 100 beats/min, a blood pressure of 115/67 mmHg, and a temperature of 38.2°C. No infection source was identified on physical examination. Emergency ultrasonography revealed the left hydronephrosis and hydroureter. Blood tests showed WBC 21,080/mcL (band 1%, segment 94.5%), Hb 10.8 g/dL, platelet 209,000/mcL; BUN/creatinine 25.9/1.97 mg/dL, Na^+/K^+ 126.0/5.21 mEq/L, glucose 182 mg/dL, and CRP of 5.63 mg/dL. No pneumonia patch was found on his chest X-ray. Urinalysis showed pyuria, suggestive of urinary tract infection. An abdominal computed tomography (CT) was done to determine potential causes of ureteral obstruction. The tip of the urethral catheter was found misdirected into the left ureter, with swelling of the vesicoureteric junction and unilateral hydroureteronephrosis (Figure 1). The catheter was removed immediately and replaced with an open-end Foley catheter. Empiric antibiotics were administered, adjusted later based on the results of culture and susceptibility test. He was discharged without complication after 11 days of hospitalization. Urine culture harvested carbapenem-resistant *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*, both with colony counts > 10⁵ CFU/mL.

2. Discussion

Urethral catheterization is a widely done clinical procedure, particularly among patients with prostatism or neurogenic bladder. However, there are well-recognized complications, including catheter-associated urinary tract infections, pain, and genitourinary trauma.¹ Misplacement of an indwelling catheter in the ureter is rare.^{2–4} For a total of 18 reported cases, including the one we reported, more female patients were identified (F:M = 13:5). The shorter urethra and the direction at which the catheter enters the bladder may make it vulnerable to misdirect the catheter to the ureteral opening in female patients.² Neurogenic bladder (12/18) and sensory/cognitive disorders (9/12) were common. Chronic indwelling of a urinary catheter contributes to increase the chance of misplacement, while lack of pain sensation or unable to report the discomfort may explain why many misplacement occurred in patients with sensory/cognitive disorders.²

To reduce the rare, but unnecessary complication, we should be careful to drain the urinary bladder, especially in women, patients with neurogenic bladder, or sensory disorders. When inserting a Foley catheter into the bladder, the catheter should be fully inserted into the urethra. But when pain or resistance is encountered, the tube should be retracted or the insertion direction adjusted. The balloon is then filled with water. Stop the water filling immediately when there is any pain or increased resistance. When the balloon has been filled, gently retract the catheter until you feel a slight tug that the balloon rests against the bladder neck. Urine should be drained without leakage around the indwelling catheter. If aberrant placement is suspected, the diagnosis should be confirmed with CT or ultrasound.⁵

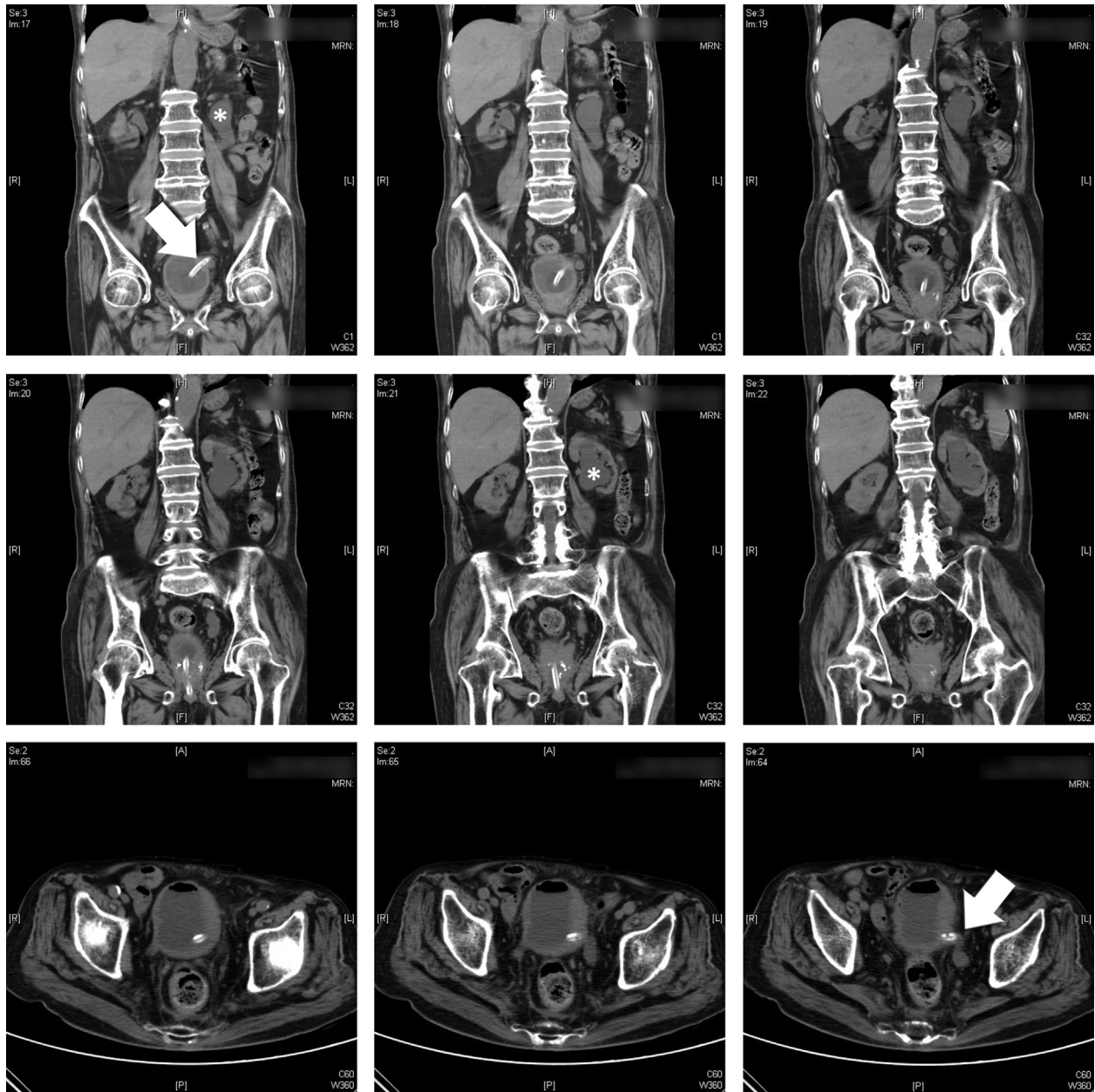


Figure 1. Abdominal computed tomography with coronal reconstruction. Aberrant placement of the catheter tip in the orifice of left ureter can be identified (arrow), with swelling of the vesicoureteric junction and unilateral hydronephrosis (*).

References

1. Leuck AM, Wright D, Ellingson L, Kraemer L, Kuskowski MA, Johnson JR. Complications of Foley catheters—is infection the greatest risk? *J Urol.* 2012;187:1662–1666.
2. Ishikawa T, Araki M, Hirata T, Watanabe M, Ebara S, Watanabe T, et al. A rare complication: misdirection of an indwelling urethral catheter into the ureter. *Acta Med Okayama.* 2014;68:47–51.
3. Anderson BW, Greenlund AC. Ureteral cannulation as a complication of urethral catheterization. *Korean J Urol.* 2014;55:768–771.
4. Modi PK, Salmasi AH, Perlmutter MA. Inadvertent foley catheterization of the ureter. *Can J Urol.* 2014;21:7326–7329.
5. Baker KS, Dane B, Edelstein Y, Malhotra A, Gould E. Ureteral rupture from aberrant Foley catheter placement: a case report. *J Radiol Case Rep.* 2013;7:33–40.

Zhe Feng Mai, MD

Chung Hsien Yang, MD

Department of Emergency Medicine, Chiayi Christian Hospital, Taiwan

Ying C. Huang, MD, MS*

Department of Emergency Medicine, Chiayi Christian Hospital, Taiwan

*Department of Emergency Medicine, Medical Center &
School of Medicine, Kaohsiung Medical University, Taiwan*

City, 60002, Taiwan. Tel.: +886 5 2765041x1984;
fax: +886 5 2759491.

*Corresponding author. Department of Emergency Medicine,
Chiayi Christian Hospital, 539, Chuan-Hsiau Road, Chiayi

E-mail address: Galaxy.bear@msa.hinet.net (Y.C. Huang).

21 November 2015